TLT-2KGPS/GSM Car Tracker

Quick start Guide V3.0

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Shenzhen V-sun Electronics Co. Ltd.

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Chapter one Preface

I. Overview

TLT-2K is a perfect combination of GSM and GPS technologies. The advanced technologies of the product in GSM and GPS fields are verified by its accurate dimension and simple appearance. It represents a typical design integrating the communication product and GPS positioning.

We provide professional safety-guarding and car-positioning products and solutions.

Before you use the product, please take some time and go through this instruction manual to understand operational details and receive better services.

II. Notice

1. Please read the instruction manual carefully and operate the product properly to avoid any trouble.

2. It is recommended to install the product in a professional automobile workshop to ensure operating safety and concealment of installation.

3. The instruction manual is only for your reference. In case of any difference between the manual and the actual product, the latter shall prevail.

4. Product parameters and functions are subject to upgrade without notice. In case of any question, please contact V-SUN or your distributor.

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Chapter Two Device Description

TLT-2K is a car positioning and tracking device based on GPS technology and GSM/GPRS technology. It receives the latitude and longitude of the user's location through cell phone messages and then locates the tracker on Google Map or other digital map software; or positioning data is uploaded by the tracker to the specified server through GPRS, and the user may search the real-time position and historical track of the tracker on the internet.

TLT-2K car tracker applies to motorcycles, electric golf carts and private cars. The product with built-in antennae integrated is easy to install.

I .Quick using the product

1. Product appearance

Figure 1 product appearance

2. Definition of external power wire

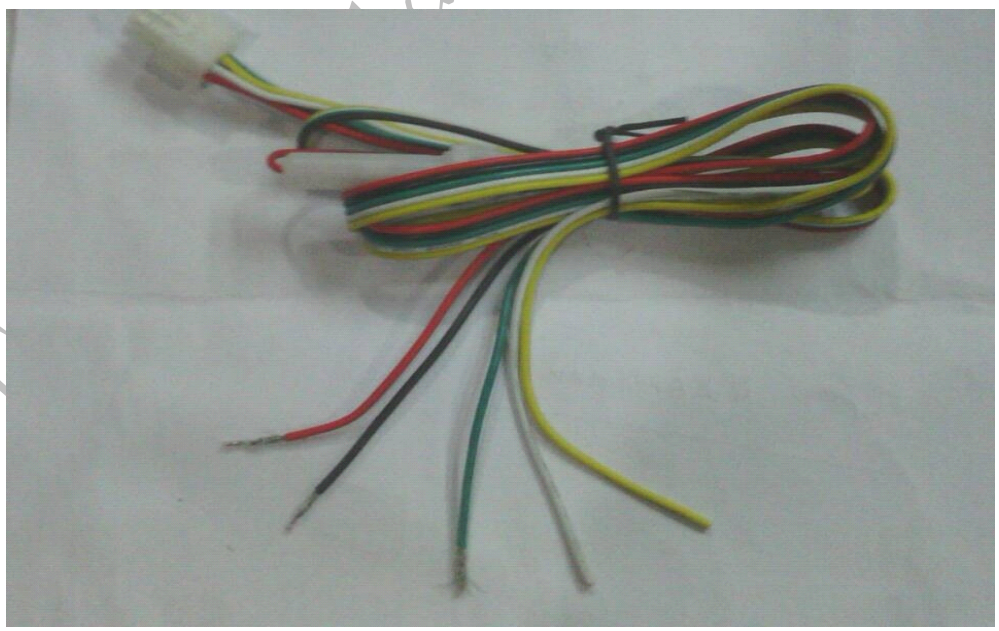

Figure 2 Pin from Left to Right

PIN1 (red): 12V power wire of vehicle to connect positive electrode of vehicle battery;

PIN2 (black): ground wire to connect negative electrode of vehicle battery;

PIN3 (green): ACC wire to supply power for car ACC;

PIN4 (white): control wire of fuel cutoff/power failure to connect relay;

PIN 5 (yellow): SOS wire to connect ground wire and trigger SOS;

3. **Relay connection method**

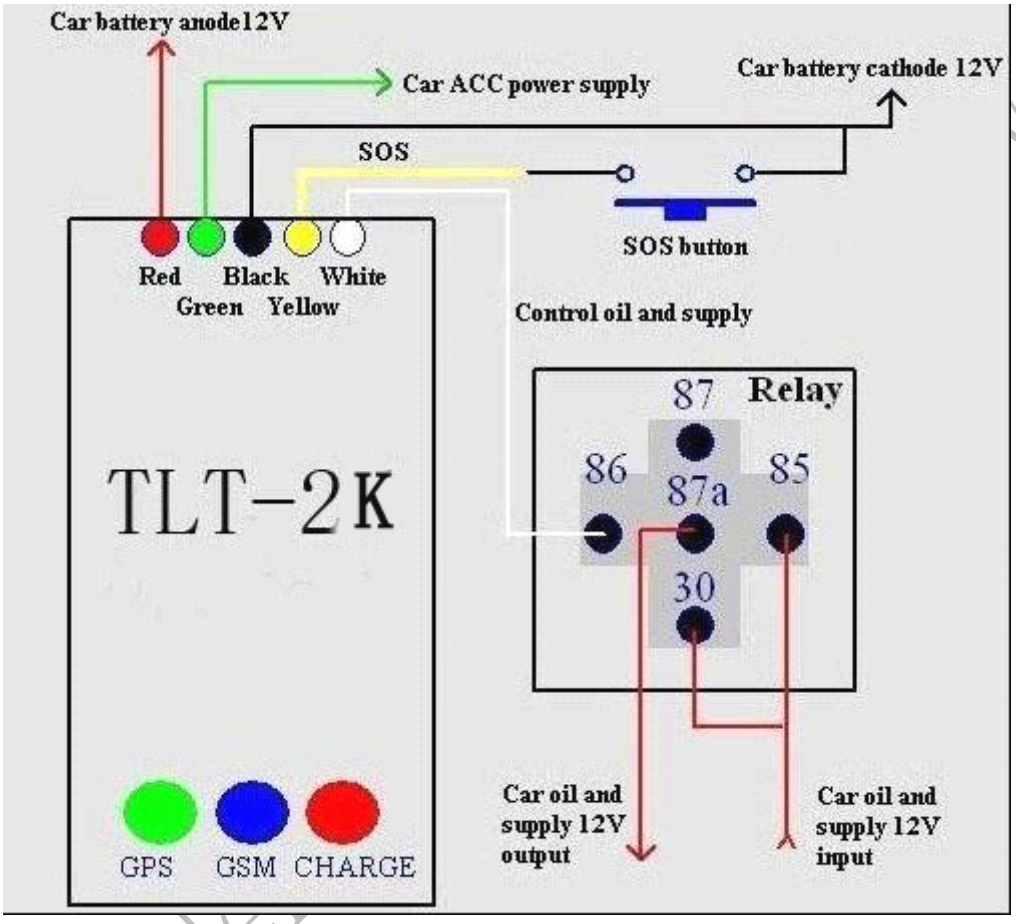

Figure 3 **relay connection method**

4. SIM card installation

a. Select SIM card

●You can use SIM card provided by local mobile operators

●It supports SMS/GPRS function and has enough balance.

b. Open the back shell of device, then insert SIM card into the special groove and lock it.

Note: Attention should be paid to SIM card installation sequence: firstly insert SIM card and then connect external power supply. Never reverse the sequence to avoid damage to SIM card.

5. LED status description

5.1. Green LED ---- GPS status indicator

Status	Description
Off	GPS unavailable
Quick flash	GPS available

5.2 Blue LED ---- GSM status indicator

Status	Description
Quick flash	No SIM card or GSM network
Flash once every 8s	GSM works normally

5.3. Red LED ---- charge indicator

Charging the device is executed 5 minutes every 20 minutes; in addition, the device will be in charging status within 4 seconds after the first power supply.

Status	Description
Normal light	Under charging
Weak light	Charging completed

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5. Common instruction:

1> Single positioning: write the message “6660000” and send it to the terminal SIM card number, then current longitude and latitude can be obtained;

2> Return Chinese address: write the message “6670000” and send it to the terminal SIM card number, then current Chinese address of the device can be obtained as below:

3> Set APN: #803#0000#CMNET## (APN is CMNET in default, it is unnecessary at home)

4> Set IP and port: #804#www.gps068.com#6998## (domain name may be replaced with IP address);
5> Set upload interval: #805#0000#60#1#
6>Set GPRS mode: 7100000
7>Car mode: 1200000
8>Daily timing report: 66500001200
9>Timing upload in shutoff mode: #819#0000#30##
10>Mileage statistics: 1410000（start mileage statistics）
1430000(read mileage data)

II. Product characteristics

1. Built-in high-performance GPS chipset enables the product to provide accurate positioning in the event of weak signal and to work normally in urban area, valleys or other sight-limited districts.

2. Built-in GSM/GPRS model supports GSM900/1800MHz (850/1900 MHz), thus it can work throughout the world.

3. It supports SMS communications or GPRS TCP connection, and receives position information through cell phone message or used to look into movement track on internet.
4. It provides such functions as SOS, fuel/electricity shut-off, warning by cutting off external power wire, geo-fence function, Overspeed warning, historical data upload, parking throttle upload and moving vehicle tracking timing upload.
5. It has power-saving function and its waiting call time is improved in electricity-saving mode.
6. It is equipped with highly reliable electric circuit design and complies with electronic industry standard.

Ⅲ Specifications

Hardware	**Parameter**
GSM module	**MTK GSM/GPRS chipset** **GSM 900/1800 double frequency , or** **GSM 900/1800/850/1900 four frequency (optional)** **Supports TCP protocol**
GPS chip	**GPS chip set with high sensitivity**
GPS sensitivity	**-160dBm**
GPS frequency	**L1,1575.42MHz**
Code	**C/A Code**
Channel	**50-channel, omnibearing tracking**
Position accuracy	**<2.5m,CEP**
Speed accuracy	**0.1m/s**

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Time accuracy	**1us and synchronous with GPS time**
Coordinates	**WGS-84**
Reacquisition	**0.1s on average**
Hot start	**1s on average**
Warm start	**30s on average**
Cold start	**32s on average**
Altitude Limit	**Maximum 18,000 meter (60,000 feet)**
Velocity limit	**Maximum 515m/s (1000 knot)**
Acceleration Speed limit	**Less than 4g**
Working temperature	**-25℃to 70℃**
Humidity	**5%~95% non-concretion**
Dimension	**88mm×51mm×19mm**
Voltage	**12-24V**

Ⅳ Accessories

1. TLT-2K GPS/GSM Car Tracker
2. Power wire
3. Battery
4. Instruction manual (CD)

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Chapter Three Detailed operations and instruction

Ⅰ.Operation in message mode

1. Set prestored number

Firstly, as the user of such product, you need to pre-store telephone number before performing instruction operation on the device.

Format: *new number4-20*user password 4 digits *(1-3)**

For example: *13800000000*0000*1**

Description:1.The terminal receive this instruction and then return “SET USER NUMBER 1 OK”.

2. Default code of the device is 0000; at most 3 phone numbers can be preset.

3. Non-prestored number can not be used to dial or connect device end telephone but can send message instruction.

2. Change user password

Format: 777+new password + old password

For example: 77712340000

Description: The terminal receives the instruction and return confirmation message “SET USER PASSWORD OK”.

3. Position inquiry

Format: 666+ passwords

For example: 6660000

Description: the internal receive this instruction and return position information:

Lat: latitude (accurate to 5 digits after decimal point)

Long: longitude (accurate to 5 digits after decimal point)

Speed: Speed KM/H (accurate to 2 digits after decimal point)

Direction: course direction (accurate to 2 digits after decimal point)

Date: YYYY-MM-DD

Time: HH:MM:SS

BS: Base station information

FIX: positioning status (A/V) (A stands for Available, V stands for Unavailable)

ID: IMEI

STATE: message status

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4. Chinese address inquiry

Format: 667+password

For example: 6670000

Description: When the terminal receives this instruction, it will return Chinese address message . For example: Within 31 meters southwest of Shangjuhaoyuan East Gate on Jingtian East Road in Shenzhen, Guangdong.

5.Google map inquiry

Formate:669+password

For example: 6690000

Description: when the terminal receives this instruction, it will return Google map link: http://maps.google.com/maps?f=q&hl=en&q=22.554765,114.104716&ie=UTF8&z=16&iwloc=addr&om=1

6. Calling switch instruction

Calling on:151+password

For example:1510000

Calling off: 150+passwork

For example:1500000

Description: 1.when the terminal receives calling on/off instruction, it will return confirmation information: "SET VOICE CALL:ON(OFF)";

2. Once receiving calling off instruction, it will turn off calling function in the event of power failure alarm, SOS, fence exit or entering.

7. Phone positioning function

If incoming call is from the prestored phone number and it is hung up after ringing 2-5 times, the device will send positioning information with status "CALL". If non-prestored phone number calls in, it will be hung up directly without any function.

8. SOS function

Long press SOS key over 3 seconds, then the terminal will send positioning information with format "SOS" to the prestored phone number (3 at most). Meanwhile, the first prestored phone number will be called. If it fails (the phone is turned off or unconnected), the second and the third phone number will be called in sequence.

Note: If calling status is off, message will be sent to prestored number user instead of calling him.

9. Power failure alarm switch

Switch on power failure alarm: 011+ passwords

For example: 0110000

Switch off power failure alarm: 010+ passwords

For example: 0100000

Description: 1. Once the terminal receives Switch on/off instruction, it will return confirmation information : "DEFENCE ON (OFF)" .

2. Once power failure alarm is started and external power supply is cut off or unconnected unexpectedly, the

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terminal will send positioning information with state “DEF” to the prestored numbers (3 at most); meanwhile, the first prestored phone number will be called. If it fails (the phone is turned off or unconnected), the second, third phone number will be called in sequence.

3. Ex-factory setting or power failure alarm after restoration is in “off” status.

4. If calling status is off, message will be sent to prestored user instead of calling him.

10. Fuel cutoff/power failure function

10.1 Start fuel cutoff/power failure

Start fuel cutoff/power failure instruction: 900+ passwords

For example”9000000

Confirm starting fuel cutoff/power failure instruction: 901+ passwords

For example: 9010000

Description: As fuel cutoff/power failure operation is dangerous to some extent, one more confirmation operation is necessary. After receiving instruction 900, the terminal will return confirmation message “Confirm Power OFF?” and wait for the instruction of starting fuel cutoff/power failure. If it receives confirmation instruction (901) within 10 minutes, it will return confirmation message “POWER OFF OK”, here, fuel cutoff/power failure function is started successfully.

10.2 Close fuel cutoff/power failure

Close fuel cutoff/power failure instruction: 902+password

For example: 9020000

Confirm closing fuel cutoff/power failure instruction: 903+ passwords

For example: 9030000

Description: once the terminal receives this instruction above, it will return confirmation information “Confirm Power ON?”; if 903 instruction is received within 10 minutes, it will return such information as “Confirm Power ON?”, thus, closing fuel cutoff/power failure is carried out successfully.

Note: this operation is a little dangerous. Traffic accident will be caused by sending the instruction on the highway. Please be careful not to use the instruction above until it is needed indeed.

11. Super electricity-saving mode

11.1 Open vibration control (motorcycle mode)

Format: 121+ password

For example: 1210000

Description: 1. The terminal receives this instruction, then return confirmation information ： “OPEN VIB MODE”；

2. In the mode, the device will enter shutoff mode if no vibration within 5 minutes; at the timed expected moment, the device will wake up automatically and enter again into shutoff mode after sending data.

3. In shutoff mode, the device will quit from shutoff mode immediately if it vibrates.

4. Ex-factory setting or vibration mode after restoration is off.

11.2 Close vibration control (car mode)

Format: 120+ passwords

For example: 1200000

Description: 1. The terminal receives this instruction, then return confirmation information: CLOSE VIB

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MODE;

2. In this mode, if ACC is on, the device will be in normal mode; if ACC is off, it will enter into OFF mode; at the timed expected moment, the device will be woken up automatically and after sending data, it will quit from OFF mode.

3. In OFF mode, if the device vibrates, will quit from OFF mode immediately.

Note: in the two modes above, the device in OFF mode will be woken up

1. by power failure alarm;
2. by device vibration;
3. by SOS; or
4. at the timed expected moment specified by 819 instruction.

12. Upload interval setting in OFF mode

Format: #819#password#sampling interval##

For example: 8190000

Description: 1. The terminal receives this instruction, and then return confirmation information: "GPRS REPORT SAMPLING 2 OK";

2. Sampling interval ranges 【10,2000】with unit: Minute;

3. After success to set the instruction, the device in OFF mode will start as per the set interval and then sends information. The device will enter into OFF mode after completing sending message.

4. It should be noted that sampling interval being zero means not entering OFF mode; the respond information is: **"SUPER POWER-SAVE MODE DISABLED".**

13. Set geo-fence

Format:006+user password+GX,IO/I/O,E/W longitude upper limit+N/S latitude upper limit, E/W longitude lower limit +N/S latitude lower limit

For example: 0060000G1,IO,E114.10004N22.55705,E115.10006N23.55706

Description: 1. The terminal receives this instruction and return confirmation information： "SET SQUARE GEO-FENCE GX IO OK"；

2. GX represents geo-fence X with the range 【1， 16】. Longitude and latitude are measured by the unit "degree" and accounted to 5 decimal places;

3. The fence will be automatically started after setting is finished;

4. If calling status is OFF, it will only send message to prestored number user instead of calling him.

5. Longitude and latitude after restoration are represented by zero. Fence is in OFF status.

14. Geo-fence switch

Geo-fence start format:311+password+GX

For example: 3110000G1

Geo-fence closing format:310+password+GX

For example: 3100000G1

Description: once the terminal receives geo-fence start (closing) instruction, it will return such information as "SET SQUARE GEO FENCE GX:ON(OFF)".

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15. Overspeed alarm function

Format: #122#password#X##

For example：#122#0000#250##

Description: 1. The terminal receives this instruction, then return the information “SET RATE LIMIT:X”. if the device exceeds the set speed, it will send to the first prestored number user positioning information with STATE”OVERSPEED”.

2. X represents speed value with range 【0，999】and unit “KM/H”.

3. X=0 means shutting off overspeed alarm function.

16. Mileage statistics function

1 .close mileage statistics: 140+ passwords

For example: 1400000

2. Start mileage statistics: 141+ passwords

For example: 1410000

Description: when the terminal receives mileage statistics start(closing)instruction, it will start (or close) such function and return the confirmation information : MILEAGE STATISTICS ON(OFF)OK.

3. Read current mileage:

Format:143+password

Description: when the terminal receives this instruction, it will read the current mileage and then send to the sending party such confirmation information as: MILEAGE STATISTICS: ON CURRENT TOTAL MILEAGE: XX.(XX means current total mileage with unit “M”)

Note: mileage statistics is in OFF status in default.

17. Set time zone

Format: 896+password+D+NN

Description: 1. The terminal receives this instruction, then returns confirmation information: “TIME ZONE SET OK,CURRENT：E8”；

2. D is represented by E/W, east and west time zone, NN stands for 2 digits (1-12) representing time zone sequence.

Ⅱ. Utilization under GPRS mode

1. set GPRS access point (APN)

Format 1: #803#password#APN##

For example：#803#0000#CMNET##

Description: the terminal receives this instruction, then it will return such confirming information as: “SET GPRS APN OK”

In default, APN of the device is CMNET, domestic users are unnecessary to set the quantity

2. Format: #804#password#IPaddress/domain name#port##

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For example：#804#0000#www.gps068.com#6998##

Description: the terminal receives this instruction and then returns the confirmation information “SET SERVER IP AND PORT OK”

3. Set timed upload

Format ：#805#password#sampling interval# uploaded data quantity##

For example：#805#0000#10#6##

Description: 1. When the terminal receives this instruction, it will return the confirmation information: “GPS SAMPLING TIME AND QUANTITY OK”

2.sampling time ranges【10，59999】with the unit of second；uploaded data quantity ranges【1，50】。

3.if the uploaded data quantity is zero, that means shutting off timing upload and then it return confirmation message: “GPRS TIMER STOP”。

4. Set GPRS time zone

Format: 897+ password 4 位+D+NN

For example: 8970000E08

Description: 1. The terminal receives this instruction and then return such confirmation message: “GPRS TIME ZONE SET OK,CURRENT：E8”；

2. D is represented by E/W, east and west time zone; NN is two-digit number (1-12) standing for time zone sequence.

3. This instruction is valid only for the uploaded data under GPRS mode.

Ⅱ. Auxiliary function

1. Restore

Format: *RESET#密码##

For example: *RESET#0000##

Description: when the terminal receives this instruction, it will restart and restore to the ex-factory setting.

2. Restart

Format: *RESTART#password##

For example: *RESTART#0000##

Description: when the terminal receives this instruction, it will only restart.

3. Read current setting

format：*RCONF#

Description: once the terminal receives this instruction, it will return the following configuration information:

Data format:

IMEI:（ID sign code）

MOD:P2P/GPRS（message mode/GPRS mode）

GPS:ON/OFF/AUTO（on/off/power saving）

HFR: ON/OFF (hands-free switch)

MTPRF: SILENT/NORMAL (monitor/normal)

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BS:（return quantity of base stations）
GEO-FENCE=ON/OFF（fence open/close）
GEO-FENCE STATE:RS/OS（fence inside/outside）
DEFENCE：ON/OFF（power failure ON/OFF）
VOICE：ON/OFF（Calling ON/OFF）

POWER：ON/OFF（power failure ON/OFF）
RATE：(overspeed alarm set value)
ST:（time interval of timing request position information）
TN:（timed request number under message mode）
STLOW:0,OFF（slow sending timing interval）
TNLOW: （slow sending request number）
DISTANCE: 0, equal distance upload (inapplicable temporarily)
INVALID UPLOAD:（invalid data upload ON/OFF）

UNLIMITED:OFF（calling limit ON/OFF）
MILEAGE:0,OFF（mileage statistics）
MOVE:（displacement alarm diameter, ON/OFF）
ACC PROMPT:ACC ON/OFF（status shift ON/OFF）
APN:,（APN,APN user name，APN password）

VIB MODE：OFF/ON (shutoff mode ON/OFF)
TOWED：ON/OFF, 0(trailer alarm ON/OFF, delay time)
DAILY：OFF/ON（daily timing report ON/OFF）

GU:,（GPRS user name，password）
SRV: （server IP address, port NO.）
SAMP:（sampling interval, upload quantity）
SAMP2：（shutoff timed time）
HISTORICAL SAMP:（historical upload sampling interval）
TIME ZONE:（time zone）

U1:（number 1, password）
U2:（number 2, password）
U3:（number 3, password）
UP:（user password）
SC:（service centre number, service password）

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Ⅲ. Relevant agreement

1.Positioning information return agreement in SMS mode

Format is shown as below:

Lat: latitude direction (+/-) latitude value (accurate to 5 digits after decimal point)

Long: longitude direction (+/-) longitude value (accurate to 5 digits after decimal point)

Speed: Speed KM/H (accurate to 2 digits after decimal point)

Direction: course direction (accurate to 2 digits after decimal point)

Date: YYYY-MM-DD

Time: HH:MM:SS (Greenwich Mean Time)

BS: Base station information

FIX: positioning status (A/V) (A stands for Available, V stands for Unavailable)

ID: IMEI (device IMEI number)

STATE: message status(explanation is shown as “remark” hereafter)

For example:

Lat: +22.50500
Long: +114.01000
Speed: 0.00KM/H
Direction: 315.00
Date: 2008-04-25
Time: 16:39:45
BS: 25ee0dff
Fix: A
ID: 353686009002030
STATE: SMS

Remark: status signs in SMS mode:

Status	Definition
SMS	Return status after 666 instruction
CALL	Call but unconnected
ANSWER	Call and connected
SOS	Return status after SOS
OS	Exit from fence
RS	Enter fence
OVERSPEED	Overspeed alarm
SAFE SPEED	Return to safe speed after overspeed
LP	Low power alarm

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2. Corresponding agreement in GPRS mode

2.1. General data upload agreement

Format: #<IMEI number>#<user name>#<password>#<status>#<data quantity>#

<BS information >$GPRMC,<time>，<positioning status>，<latitude>，< latitude indicator>，<longitude>，<longitude indicator>，<speed>，<course direction> ，<date>，，，##

for example:：#123456789000001#V500#0000#SMS#1

#25ee0dff$GPRMC,083945.180,A,2233.4249,N,11406.0046,E,0.00,315.00,251207,,,A*6E##

Description

1. IMEI: IMEI number of the terminal, 15 digits;
2. User name: GPRS user name, namely 801 instruction;
3. Password: GPRS user password, namely 802 instruction;
4. Status: means the status of affairs, for details please refer to “GPRS upload status remake” marked on the back;
5. Data quantity: upload data quantity this time, namely<sampling quantity>;
6. BS information: base station code format: aaaabbbb, aaaa represents position, bbbb represents residential area;
7. Time: GPS time, with format: HHMMSS.SSS
8. Positioning status: A/V means available/unavailable;
9. Latitude: current format: DDDMM.MMMMM, account to 4 decimal places;
10. E/W: east longitude/west longitude
11. Latitude: current format: DDDMM.MMMM, account to 4 decimal places;
12. N/S: North longitude/south longitude;
13. Speed: movement speed, unit: KNOTS/H, account to 2 decimal places;
14. Course direction: movement direction, unit: degree, account to 2 decimal places;
15. Date: GPS date, format: DDMMYY;

Remark: status sign in GPRS mode:

Status	Definition
SMS	Return status of 806 instruction
CALL	Call but unconnected
ANSWER	Call and connected
SOS	Return status after SOS
OS	Exit from defence
RS	Enter fence
AUTO	Timing upload for moving tracking mode
AUTOLOW	Parking throttle mode timing upload
AUTOSTART	ACC open
AUTOSTOP	ACC close
ACC OS	Displacement-in alarm
ACC RS	Displacement-out alarm

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DEF	Power failure alarm
STORAGE	Historical data upload
Overspeed	Overspeed alarm
SAFE SPEED	Return to safe speed after overspeed
TOWED	Trailer alarm
LP	Low power alarm

2.2. Agreement on mileage statistics data upload

Mileage report data format: +IMEI+Epoch+Mileage+CS++\r\n

For example: device IMEI is 135790246813555, current time is 12:04:12, 12/14/2011 (GMT), current mileage is 15000 meters, thus the uploaded data should be:

+135790246813555+4EE890A1+15000+77++\r\n

Description:

1. IMEI: device IMEI number;
2. Epoch: GMT time, total seconds since 00:00:00, 01/01/1970;
3. Mileage: total distance;
4. CS: Domain value of left/right character from the first "+" to the first "+" in front of CS, both included.

2. Agreement on communication

1. Auto answer incoming calls

The terminal automatically answers the incoming call after ringing 10 seconds (approximately 5 vibrations).

3. Agreement on restart

The terminal will restart every 3 hours.

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Warranty

The following after services are provided in order to serve and satisfy the customers:

Ⅰ. Warranty scope:

1. The product may be replaced free of charge within 30 days since purchase in the event that it is ineligible when normal operation (man-made sabotage excluded) and without dismantlement.

2. The product will be maintained and repaired by V-SUN free of charge within one year after purchase if it meets with trouble in normal operation due to ineligible quality and without dismantlement.

3. The product shall be repaired upon payment beyond warranty period.

4. the product shall be repaired after the authorization of V-SUN.

Ⅱ. Exemption clauses

Any damage or malfunction of fittings incurred by user’s improper operation, maintenance, or storage;
2. Any damage or malfunction caused due to majeure such as rain, natural disaster, etc.

The instruction manual subjects to successive update without prior notice. Please contact our sales manager or technicians if needed.

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